

Characteristics

Battery Storage System



The HomeHub is a Lithium-Iron-Phosphate battery storage system with a maximum capacity of 10 kWh per chassis. The system setup is modular. Each battery module has a capacity of 2.5 kWh. One chassis can hold up to four battery modules while one Management Unit can control up to eight battery modules which means the customer can choose individually what storage capacity the HomeHub should have, starting from 2.5 kWh up to 20 kWh.

The HomeHub was designed with great emphasis on safety, performance and design. Not only is Li-Fe-Po4 the safest cell chemistry, it also provides high quality performance and reliability. In the following, we will outline the most important attributes of our energy storage.

1. [The Chassis](#)

- Our chassis is made out of stainless steel and is therefore suitable to be placed indoors and outdoors. It was important to us, to create a sustainable and long living product.
- We chose a glass front door to give the best possible overview for the systems condition at first glance.
- Underneath the chassis are rolls to ensure an easy handling of the weight and to guarantee an easy installation and relocation of the HomeHub.



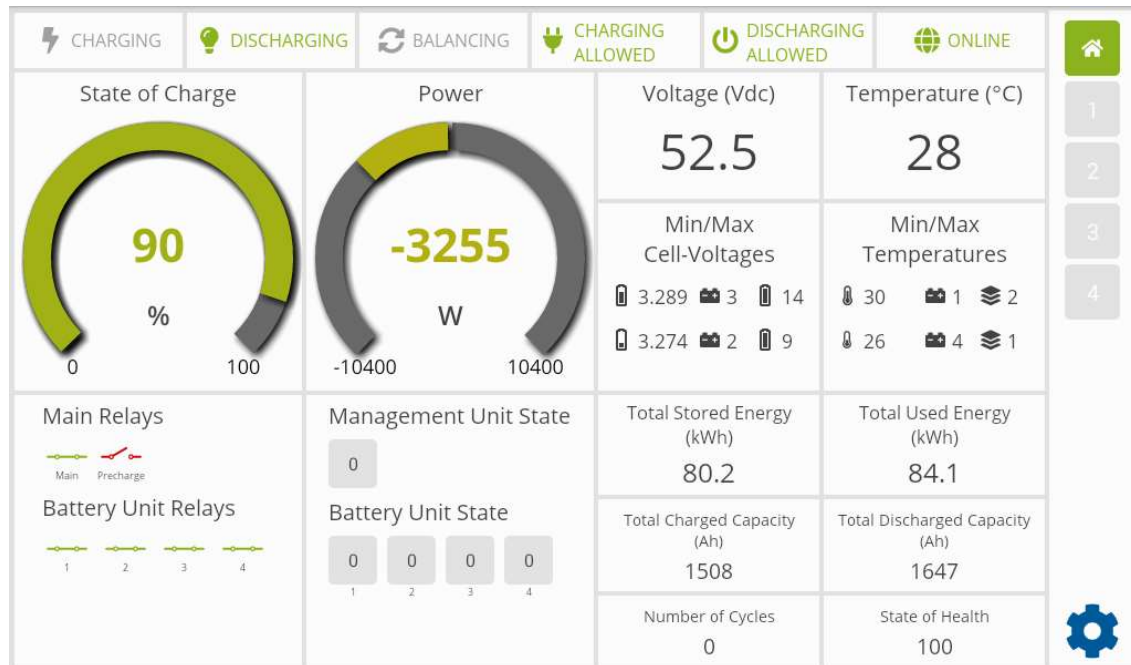
- Simple installation with one cable harness and an easy plug-in system.
- CAN-bus to address each module. Fast and easy to change in case modules are added or removed.
- Two bus bars which are screwed to each module.
- Due to low voltage there is no danger for the user at any time while working with the HomeHub.

2. Battery Module

- Each module has a capacity of 2.5 kWh. Modules can be added or removed if needed at any time.
- On the front of the modules are LED lights. The four LEDs on the left mirror the state of charge in 25% steps. The two LEDs on the right show the general status of this particular module.
- We chose Lithium-Iron-Phosphate as cell chemistry in order to invent a safe product that is not dangerous at any time, even if damaged.
- Each module has two battery blocks with each 8 cells. Each block has its own temperature control. Within the module are pouch cells which are highly reliable.
- In case one module is not working, the surrounding modules will keep working and the system will not shut down. The occurring error will be displayed on the BMS.
- Telescopic slides simplify the process of putting modules in and out of the chassis.

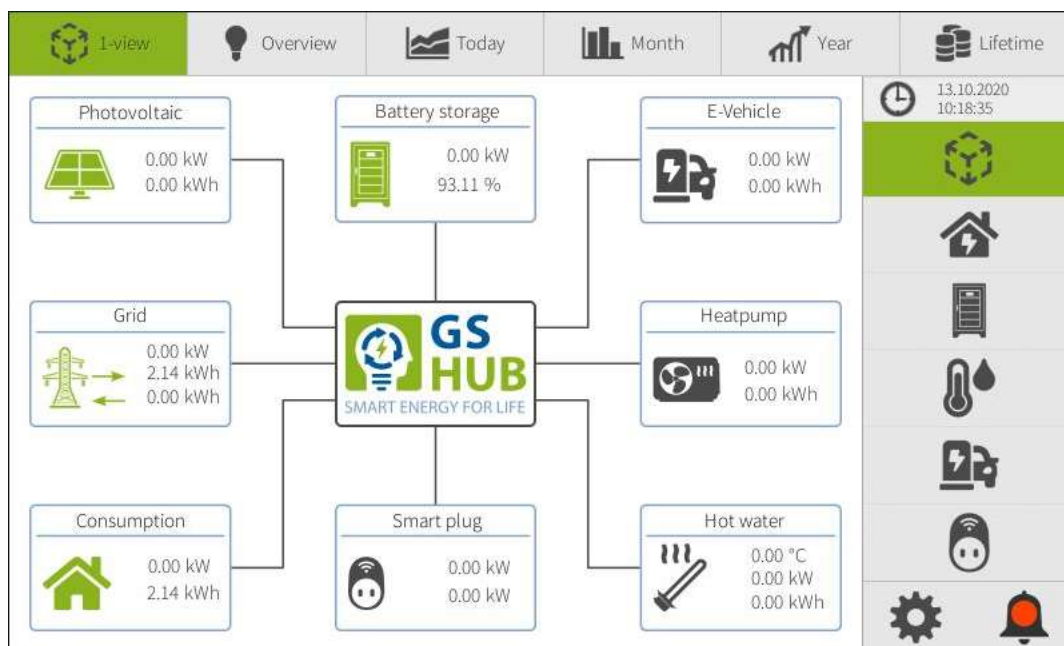


3. The Management Unit

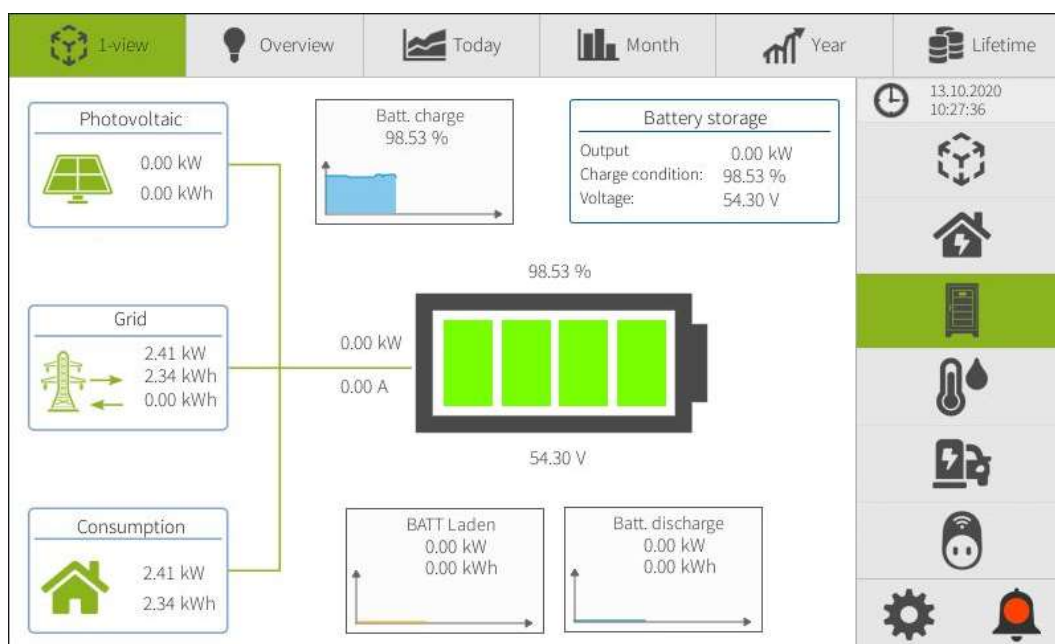


- The Management Unit is situated on top of the battery modules and gives an overview of the batteries' status and its functions. It shows the State of Charge, Power that is going in or out, Voltage and the min/max Cell-Voltage as well as the Temperature. It also shows how many battery modules are connected. Additionally, it gives you information about the total stored and used energy as well as the total charged and discharged capacity. Long term information are given with the total number of cycles and the general state of health.
- In case of an error, there is an error protocol installed which gives exact information about the problem and how to solve it.
- Under *Settings*, the user can manage the number of battery modules, the language, internet access and ask for system details. It is also possible to change into *Expert Mode* which enables the user to change the Depth of Discharge (DoD) from 60% to 100% and use the full capacity of the modules.
- Prior testings did result in a general state of health of close to 90% after 3500 cycles while the DoD was adjusted on 100%.

4. The Energy Management System – EMS



- The Energy Management System (EMS) is responsible for the smart energy management and directs the energy into the right directions. For example, the user can choose which devices need to be provided with energy.
- Additionally, the EMS monitors the energy flow and saves the data. The user can see how much energy has been used, where it came from and where it was used. The monitoring is carried out in graphs which record the energy flow development on a daily, monthly and yearly basis.



The HomeHub is a residential storage system and fulfils highest standards in quality, safety, performance and design. With battery modules from 2.5 kWh each, the user can choose what output is best for his personal home and needs. We, the GS Hub GmbH, give **10 years guarantee** on our battery modules **or 6000 full cycles**.

We invented the HomeHub with highest requirements in self-consumption and heat development. The chassis has **no air conditioning** because of the very **low heat development**. As a result of the almost insignificant heat development there is a **low self-consumption** and ideal working conditions for the cells.

The HomeHub can work on and off-grid and can provide reliable power supply in case of a black-out. In combination with a suitable inverter, the HomeHub has an **Uninterrupted Power Supply (UPS-) Function**. In case of a black out, the system reacts within milliseconds. End devices, such as light, fridges, computers etc. will not shut down, instead they will keep operating without interruption.

We are convinced that we set a new mile stone on the renewable energy market and we are excited to introduce our battery storage system to you – the HomeHub.

Based on trust – driven by passion!